

RECEIVED

TECH CENTER 1600/2900
APR 26 2002
RECEIVED 1600/2900

| | |
|--|--|
| Form 1449 (modified) Information Disclosure Statement By Applicant (Use Several Sheets If Necessary) | Docket: 091/010C Title: Techniques for Growth and Differentiation of Human Pluripotent Stem Cells Inventors: Carpenter, M., et al. Filing Date: November 26, 2001 U.S.S.N. 09/994,440 Group: 1632 |
|--|--|

U.S. Patent Documents

| Examiner Initial | Ref. | Patent No. | Filing Date | Issue Date | Class/Subclass | Inventors: | Title: |
|------------------|------|------------|-------------|------------|----------------|------------------------|--|
| TNT | A | 5,104,795 | 2/14/90 | 4/14/92 | 435/69.1 | Lee, J-H., et al. | Shortened Phosphoglycerate Kinase Promoter |
| | B | 5,166,065 | 3/31/90 | 11/24/92 | 435/240.1 | Williams, R., et al. | In Vitro Propagation of Embryonic Stem Cells |
| | C | 5,234,809 | 7/1/91 | 8/10/93 | 435/91 | Boom, W., et al. | Process for isolating nucleic acid |
| | D | 5,332,672 | 4/9/92 | 7/26/94 | 435/240.2 | Conover, J., et al. | Prevention of ES Cell Differentiation by Ciliary Neurotrophic Factor |
| | E | 5,405,772 | 6/18/93 | 4/11/95 | 435/240.31 | Ponting, I., | Medium For Long-Term Proliferation and Development of Cells |
| | F | 5,453,357 | 10/8/92 | 9/26/95 | 435/7.21 | Hogan, B. | Pluripotential embryonic stem cells and methods of making same |
| | G | 5,523,226 | 5/14/93 | 6/4/96 | 435/240.2 | Wheeler, M. | Transgenic Swine Compositions and Methods |
| | H | 5,583,016 | 10/27/94 | 12/10/96 | 435/91.3 | Villeponteau B, et al. | Mammalian Telomerase |
| | I | 5,639,618 | 5/13/94 | 6/17/97 | 435/7.21 | Gay, D. | Method of Isolating a Lineage Specific Stem Cell In Vitro |
| | J | 5,643,761 | 10/27/93 | 7/1/97 | 435/91.1 | Fisher, P., et al. | Method for Generating A Subtracted CDNA Library and Uses of the Generated Library |
| | K | 5,672,499 | 6/7/95 | 9/30/97 | 435/240.4 | Anderson, D., et al. | Immortalized Neural Crest Stem Cells and Methods of Making |
| | L | 5,789,158 | 5/18/95 | 8/4/98 | 435/6 | Knowles, B., et al. | Developmental Embryonic Mouse CDNA Libraries |
| | M | 5,840,484 | 1/27/94 | 11/24/98 | 435/6 | Seilhamer, J., et al. | Comparative Gene Transcript Analysis |
| | N | 5,843,780 | 1/18/96 | 12/1/98 | 435/363 | Thomson, J. | Primate embryonic stem cells |
| | O | 5,856,136 | 7/3/96 | 1/5/99 | 435/69.3 | Au-Young, J. | Human Stem Cell Antigens |
| | P | 5,914,268 | 11/21/94 | 6/22/99 | 435/325 | Keller, G., et al. | Embryonic Cell Populations and Methods to Isolate Such Populations |
| | Q | 5,922,597 | 7/14/97 | 7/13/99 | 435/372.1 | Verfaillie, C., et al. | Ex Vivo Culture of Stem Cells |
| | R | 5,942,435 | 6/6/95 | 8/24/99 | 435/325 | Wheeler, M. | Transgenic Swine Compositions and Methods |
| | S | 5,968,829 | 9/5/97 | 10/19/99 | 435/467 | Carpenter, M. | Human CNS Neural Stem Cells |
| | T | 5,981,165 | 6/7/95 | 11/9/99 | 435/4 | Weiss, S., et al. | In Vitro Induction of Dopaminergic Cells |
| TNT | U | 6,040,180 | 5/7/97 | 3/21/00 | 435/377 | Johe, K. | In Vitro Generation of Differentiated Neurons From Cultures of Mammalian Multipotential CNS Stem Cells |

| | |
|---------------------------|-------------------------------|
| Examiner <u>Marian H.</u> | Date Considered <u>1-8-02</u> |
|---------------------------|-------------------------------|

Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
PTO-1449 — Page 1

RECEIVED

| | | |
|-----------------------------------|--|---------------------|
| Form 1449 (modified) | Docket: 091/010C | U.S.S.N. 09/994,440 |
| Information Disclosure | Title: Techniques for Growth and Differentiation of Human Pluripotent Stem Cells | |
| Statement By Applicant | Inventors: Carpenter, M., et al. | |
| (Use Several Sheets if Necessary) | Filing Date: November 26, 2001 | Group: 1632 |

| Examiner Initial | Ref. | Patent No. | Filing Date | Issue Date | Class/ Subclass | Inventors: | Title: |
|------------------|------|------------|-------------|------------|-----------------|--------------------|---------------------|
| | V | 6,261,556 | Oct 18/99 | Jul 17/01 | 424/94.5 | Weinrich SL et al. | Purified Telomerase |

Foreign Patent or Published Foreign Patent Application

| Examiner Initial | Ref. | Document No. | Publ. Date | Jurisdiction | Title: | Translation | |
|------------------|------|----------------|------------|--------------|---|-------------|----|
| | | | | | | Yes | No |
| TNT | W | WO 94/07997 | 4/14/94 | PCT | Long-term Proliferation of Primordial Germ Cells | | |
| | X | WO 96/17627 | 6/13/96 | PCT | System for the Maintenance, Growth and Differentiation of Human and Non-Human Primate Pluripotent Stem, Progenitor and Mature Bone Marrow Cells | | |
| | Y | WO 97/21802 | 6/19/97 | PCT | Novel Embryonic Cell Populations and Methods to Isolate Such Populations | | |
| | Z | WO 97/28253 | 8/7/97 | PCT | Method for Culturing Cells Having Angiogenic Potential | Abstract | X |
| | AA | WO 97/30151 | 8/21/97 | PCT | Cytokine Expressed by Dlx/Lif-Deficient Embryonic Stem Cells for the Inhibition of Differentiation | | |
| | AB | WO 97/47734 | 12/18/97 | PCT | In Vitro Derivation and Culture of Primate Pluripotent Stem Cells and Therapeutic Uses Thereof | | |
| | AC | WO 98/00540 | 1/8/98 | PCT | Human Stem Cell Antigens, DNA Coding Therefor and Their Use | | |
| | AD | WO 98/30679 | 7/16/98 | PCT | Embryonic Stem Cell Serum Replacement | | |
| | AE | WO 98/43679 | 10/8/98 | PCT | Human Embryonic Germ Cell Line and Methods of Use | | |
| | AF | WO 99/01552 | 1/14/99 | PCT | Fluorescent Proteins as Cell-Type Specific Reporter | Abstract | X |
| | AG | WO 99/10535 | 3/4/99 | PCT | A Process to Study Changes in Gene Expression in Stem Cells | | |
| | AH | WO 99/20741 | 4/29/99 | PCT | Methods and Materials for the Growth of Primate-Derived Primordial Stem Cells | | |
| | AI | WO 99/42122 | 8/26/99 | PCT | Method of Promoting Embryonic Stem Cell Proliferation | | |
| | AJ | WO 99/43785 | 9/2/99 | PCT | Derivation of Cells and Tissues from Embryonic Pre-Stem Cells for Transplantation Therapies | | |
| | AK | EP 0695 351 B1 | 12/8/99 | EP | Isolation, Selection and Propagation of Animal Transgenic Stem Cells | | |
| V TNT | AL | FR 2744133 | 8/1/97 | FR | Procedure for Culturing Cells with Morphogenic Potential for Inducing Morphogenesis of the Aforesaid Cells, Models in Vitro of Vascular Morphogenesis thus Obtained, and their Modification for Drug Screening Derwent Summary of WO 97/28253 and FR 2744133 | Summary | X |

Other Documents

| Examiner Initial | Ref. | Author, Title, Date, Source |
|------------------|--------------|-------------------------------|
| Examiner | <i>Maren</i> | Date Considered <i>1/8/04</i> |

Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
PTO-1449 — Page 2

RECEIVED

| | | |
|-----------------------------------|--|---------------------|
| Form 1449 (modified) | Docket: 091/010C | U.S.S.N. 09/994,440 |
| Information Disclosur | Title: Techniques for Growth and Differentiation of Human Pluripotent Stem Cells | |
| Statement By Applicant | Inventors: Carpenter, M., et al. | |
| (Use Several Sheets If Necessary) | Filing Date: November 26, 2001 | Group: 1632 |

| Examiner Initial | Ref. | Author, Title, Date, Source |
|------------------|------------------------|--|
| TNT | AM | Amit, M., et al., Clonally Derived Human Embryonic Stem Cell Lines Maintain Pluripotency and Proliferative Potential for Prolonged Periods of Culture, Dev. Biology, 227:000-000 (2000) |
| | AN | Andrews, P., "Retinoic Acid Induces Neuronal Differentiation of a Cloned Human Embryonal Carcinoma Cell Line in Vitro," Dev. Biol., 103:285 (1984) |
| | AO | Baribault, H., et al., "Embryonic Stem Cell Culture and Gene Targeting in Transgenic Mice," Mol. Biol. Med. 6:481 (1989) |
| | AP | Becton Dickinson, "Product Specification Sheet : Matrigel Basement Membrane Matrix, Phenol-Red Free" |
| | AQ | Berger, C., et al., "Self Renewal of Embryonic Stem Cells in the Absence of Feeder Cells and Exogenous Leukaemia Inhibitory Factor," Growth Factors, 14:145 (1997) |
| | AR | Bodnar, A., et al., "Extension of Life-Span by Introduction of Telomerase into Normal Human Cells," Science, 279:349 (1998) |
| | AS | Bongso, A., et al., "Improved Quality of Human Embryos When Co-Cultured with Human Ampullary Cells," Hum. Reprod., 4:706 (1989) |
| | AT | Bradley, A., et al., "Modifying the Mouse: Design and Desire," Biotechnology, 10:534 (1992) |
| | AU | Brook, F., et al., "The Origin and Efficient Derivation of Embryonic Stem Cells in the Mouse," Proc. Natl. Acad. Sci., 94:5709 (1997) |
| | AV | Carnegie, J., "Immunolocalization of Fibronectin and Laminin Within Rat Blastocysts Cultured Under Serum-Free Conditions," J. Reprod. Fert., 91:423 (1991) |
| | AW | Caminci, P., et al., "High-Efficiency Full-Length cDNA Cloning," Methods Enzymol., 303:19 (1999) |
| | AX | Clontech Laboratories, SMART cDNA Library Construction Kit, Catalog #K1051-1 |
| | AY | Corrick, C., et al., "Construction of a Mouse Blastocyst cDNA Library by PCR Amplification From Total RNA," Molecular Reproduction and Development, 43:7 (1996) |
| | AZ | Deleersnijder, W., et al., "Isolation of markers for chondro-osteogenic differentiation using cDNA library subtraction. Molecular cloning and characterization of a gene belonging to a novel multigene family of integral membrane proteins," J Biol Chem, 271:19475 (1996) |
| | BA | Eisen, M., "Cluster Analysis and Display of Genome-wide Expression Patterns," Proc. Natl. Acad. Sci., 95:14868 (1998) |
| | BB | Elges, R., et al., "Establishment of Human Embryonic Stem Cell-Transfected Clones Carrying a Marker for Undifferentiated Cells," Curr Biol, 11:514 (2001) |
| | BC | Evans, M., et al., "Establishment in Culture of Pluripotential Cell from Mouse Embryos," Nature, 292:154 (1981) |
| | BD | Fenderson, B., et al., "Carbohydrate Antigens of Embryonal Carcinoma Cells: Changes Upon Differentiation," APMIS Suppl. 27, 100:109 (1992) |
| | BE | Finley, M., et al., "Synapse Formation and Establishment of Neuronal Polarity by P19 Embryonic Carcinoma Cells and Embryonic Stem Cells," J. Neuroscience, 16:1056 (1996) |
| | BF | Gardner, D., et al., "Culture and Transfer of Human Blastocysts Increases Implantation Rates and Reduces the Need for Multiple Embryo Transfers," Fertil. Steril, 69:84 (1998) |
| | BG | Gendall, A., et al., "Isolation and Characterization of a Leukemia Inhibitory Factor-Independent Embryonic Stem Cell Line," Int. J. Biochem Cell Biol., 29:829 (1997) |
| | BH | Gendron, R., et al., "Induction of Embryonic Vasculogenesis by bFGF and LIF in Vitro and in Vivo," Developmental Biology, 177:332 (1996) |
| TNT | BI | GibcoBrl Life Technologies Catalogue and Ref. Guide, pages 1-2 through 1-4, 1-94 and 1-95 (1993) |
| Examiner | Date Considered 1-8-04 | |

Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
PTO-1449 — Page 3

RECEIVED

| | | |
|---|---|---------------------|
| Form 1449 (modified) | Docket: 091/010C | U.S.S.N. 09/994,440 |
| Information Disclosure Statement By Applicant (Use Several Sheets If Necessary) | Title: Techniques for Growth and Differentiation of Human Pluripotent Stem Cells Inventors: Carpenter, M., et al. Filing Date: November 26, 2001 Group: 1632 | |

TECH CENTER 1600/2900

APR 26 2002

| Examiner Initial | Ref. | Author, Title, Date, Source |
|------------------|------|---|
| TNT | BJ | Itoh, M., et al., "Automated Filtration-Based High-Throughput Plasmid Preparation System," Genome Res., 9:463 (1999) |
| | BK | Itskovitz-Eldor, J., et al., "Differentiation of Human Embryonic Stem Cells into Embryoid Bodies Comprising the Three Embryonic Germ Layers," Mol. Med., 6:88 (2000) |
| | BL | Keller, G., "In Vitro Differentiation of Embryonic Stem Cells," Cell Biology, 7:862 (1995) |
| | BM | Kelly, DL., et al., "DNA Microarray Analyses of Genes Regulated During the Differentiation of Embryonic Stem Cells," Mol Reprod. Dev., 56:113 (2000) |
| | BN | Ko, M., et al., "Large-scale cDNA analysis Reveals Phased Gene Expression Patterns During Preimplantation Mouse Development," Development, 127:1737 (2000) |
| | BO | Koshimizu, U., et al., "Functional Requirement of gp130-mediated Signaling for Growth and Survival of Mouse Primordial Germ Cells In Vitro and Derivation of Embryonic Germ (EG) Cells," Development, 122:1235 (1996) |
| | BP | Koshimizu, U., et al., "Rapid Communication Retinoic Acid Is a Potent Growth Activator of Mouse Primordial Germ Cells in Vitro," Developmental Biology, 168:683 (1995) |
| | BQ | Life Technologies, Inc., "SuperScript II; Rnase H Reverse Transcriptase," Product Brochure; pages 1-4 |
| | BR | Matsuda, T., et al., "STAT3 Activation Is Sufficient to Maintain an Undifferentiated State of Mouse Embryonic Stem Cells," EMBO J., 18:4261 (1999) |
| | BS | Matsui, Y., et al., "Derivation of Pluripotent Embryonic Stem Cells from Murine Primordial Germ Cells in Culture," Cell, 70:841 (1992) |
| | BT | Nichols, J., et al., "Establishment of Germ-line-Competent Embryonic Stem (ES) Cells Using Differentiation Inhibiting Activity," Development, 110:1341 (1990) |
| | BU | Nichols, J., et al., "Derivation of Germline Competent Embryonic Stem Cells with a Combination of Interleukin-6 and Soluble Interleukin-6 Receptor," Experimental Cell Research, 215:237 (1994) |
| | BV | O'Shea, K., "Embryonic Stem Cell Models of Development," New Anat., 257:32 (1999) |
| | BW | Pease, S., et al., "Isolation of Embryonic Stem (ES) Cells in Media Supplemented with Recombinant Leukemia Inhibitory Factor (LIF)," Developmental Biology, 141:344 (1990) |
| | BX | Pera, M., "Human Pluripotent Stem Cells: a Progress Report," Curr Opin Genet Dev, 11:595 (2001) |
| | BY | Pedersen, R., "Studies of In Vitro Differentiation with Embryonic Stem Cells," Reprod. Fertil. Dev., 6:543 (1994) |
| | BZ | Pedersen, R., "Embryonic Stem Cell for Medicine," Scientif. Am., 280:68 (1999) |
| | CA | Rathjen, J., et al., "Formation of a Primitive Ectoderm Like Cell Population, EPL Cells, from ES Cells in Response to Biologically Derived Factors," J. of Cell Sci., 112:601 (1999) |
| | CB | Rehman, N., et al., "Development of IVM-IVF Produced 8-Cell Bovine Embryos in Simple, Serum-Free Media After Conditioning or Co-Culture With Buffalo Rat Liver Cells," Mol. Repro. Dev, 38:251 (1994) |
| | CC | Reubinoff, B., et al., "Embryonic Stem Cell Lines From Human Blastocysts: Somatic Differentiation In Vitro," Nat. Biotechnology, 18:399 (2000) |
| | CD | Robertson, E., "Derivation and Maintenance of Embryonic Stem Cell Cultures," Methods in Mol. Bio., 75:173 (1997) |
| | CE | Rose, T., et al., "Oncostatin M (OSM) Inhibits the Differentiation of Pluripotent Embryonic Stem Cells In Vitro," Cytokine, 6:48 (1994) |
| TNT | CF | Shamblott, M., et al., "Human Embryonic Germ Cell Derivatives Express a Broad Range of Developmentally Distinct Markers and Proliferate Extensively in Vitro," PNAS, 98: 118 (2001) |

| | |
|-----------------------------|------------------------|
| Examiner <i>[Signature]</i> | Date Considered 1-8-04 |
|-----------------------------|------------------------|

Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (modified)

Docket: 091/010C

U.S.S.N. 09/994,440

Information Disclosure

Statement By Applicant

(Use Several Sheets if Necessary)

Title: Techniques for Growth and Differentiation of Human Pluripotent Stem Cells

Inventors: Carpenter, M., et al.

Filing Date: November 26, 2001

Group: 1632

| Examiner Initial | Ref. | Author, Title, Date, Source |
|------------------|------|---|
| TNJ | CG | Shamblott, M., et al., "Derivation of Pluripotent Stem Cells from Cultured Human Primordial Germ Cells," Proc. Natl. Acad. Sci. USA, 95:13726 (1998) |
| | CH | Smith, A., et al., "Inhibition of Pluripotential Embryonic Stem Cell Differentiation by Purified Polypeptides," Nature, 336:668 (1998) |
| | CI | Smith, A., et al., "Buffalo Rat Liver Cells Produce a Diffusible Activity Which inhibits the Differentiation of Murine Embryonal Carcinoma and Embryonic Stem Cells," Dev. Biol., 121:1 (1987) |
| | CJ | Sigma, Product Information for Laminins for Cell Culture |
| | CK | Takahashi, N., et al., "Toward a Whole cDNA Catalog: Construction of an Equalized cDNA library from Mouse Embryos," Genomics, 23:202 (1994) |
| | CL | Thomson, J., et al., "Embryonic Stem Cell Lines Derived from Human Blastocysts," Science, 282:145 (1998) |
| | CM | Thomson, J., et al., "Neural Differentiation of Rhesus Embryonic Stem Cells," APMIS, 106:149 (1998) |
| | CN | Thomson, J., et al., "Isolation of a Primate Embryonic Stem Cell Line," Proc. Natl. Acad. Sci. USA, 92:7844 (1995) |
| | CO | Thomson, J., et al., "Primate Embryonic Stem Cells," Current Topics in Developmental Biology, 38:133 (1998) |
| | CP | Vassilieva, S., et al., "Establishment of SSEA-1- and Oct-4-Expressing Rat Embryonic Stem-like Cell Lines and Effects of Cytokines of the IL-6 Family on Clonal Growth," Exper. Cell Research, 258:361 (2000) |
| | CQ | Worrall, D., et al., "A Carrot Leucine-Rich-Repeat Protein That Inhibits Ice Recrystallization," Science, 282:115 (1998) |
| | CR | Wenk, J., et al., "Glycolipids of Germ Cell Tumors: Extended Globo-Series Glycolipids are a Hallmark of Human Embryonal Carcinoma Cells," Int. J. Cancer, 58:108 (1994) |
| | CS | Williams, R., et al., "Myeloid Leukaemia Inhibitory Factor Maintains the Developmental Potential of Embryonic Stem Cells," Nature, 336:684 (1988) |
| | CT | Woltjen, K., et al., "Retro-recombination Screening of a Mouse Embryonic Stem Cell Genomic Library," Nucleic Acids Research, 28:e41 (2000) |
| ↓ | CU | Xiong, J., et al., "Large-Scale Screening for Developmental Genes in Embryonic Stem Cells and Embryoid Bodies Using Retroviral Entrapment Vectors," Dev. Dynamics, 212:181 (1998) |
| TNJ | CV | Zandstra, P., et al., "Leukemia Inhibitory Factor (LIF) Concentration Modulates Embryonic Stem Cell Self-Renewal and Differentiation Independently of Proliferation," Biotechnol. Bioeng., 69:607 (2000) |

| | | | |
|----------|-------------------------------|-----------------|--------|
| Examiner | <i>Michael J. [Signature]</i> | Date Considered | 1-8-04 |
| | | | |

Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.